

What is claimed is:

1. An extendable arm for a motor vehicle comprising:

a main shaft moveably attached to the motor vehicle, said main shaft having first and second opposed ends, said first end being attached to the motor vehicle and said main shaft having a stowed position, said main shaft second end is positioned adjacent the motor vehicle and said main shaft first end is pivotally attached to the motor vehicle so that a horizontal and vertical orientation of said main shaft can be selectively set;

an extendable and retractable assembly mounted within said second end;

said extendable and retractable assembly adapted to extend and retract, so that a free end of said extendable and retractable assembly can be selectively extended away from or retracted towards said main shaft second end

a first drive attached to said main shaft for setting said horizontal orientation;

a second drive attached to said main shaft for setting said vertical orientation;

a third drive attached to said extendable and retractable assembly for extending and retracting said extendable and retractable assembly; and

a controller to control said first, second and third drives.

2. The extendable arm according to claim 1, further comprising:

said free end adapted to receive an accessory thereon, said accessory comprising one or more of the following, retina scanner; fingerprint system; sensor that detects the presence of chemicals such as alcohol, illegal drugs, gun powder, bio-hazards, metal, nuclear

material; containers for the transfer of documents; clips; nozzles to discharge immobilizing gas, two-way audio-visual camera; two-way microphone-speaker system.

3. An extendable arm according to claim 1, further comprising:

an openable door integral with the body of the motor vehicle;

a deployment carriage having a fixed end attached to the vehicle frame, and a moveable end attached to said main shaft first end, whereby said moveable end can move to be disposed outside and inside the vehicle body, wherein when inside the body, said openable door can close to confine the extendable arm inside the body.

4. An extendable arm according to claim 1, further comprising:

said extendable and retractable assembly extension and retraction being activated by changing a fluid pressure.

5. An extendable arm according to claim 1, further comprising:

said extendable and retractable assembly being an accordion-type arm.

6. An extendable arm according to claim 1, further comprising:

said extendable and retractable assembly being a telescoping assembly.

7. An extendable arm according to claim 1, further comprising:

said controller having programmable features to move said free end to a position defined by pre-selected coordinates.

8. An extendable arm according to claim 1, further comprising:

the extendable arm responsive to a controller from a distantly remote location.

9. An extendable arm for the outside of a motor vehicle comprising:

a mounting bracket configured to be attached to the outside of the motor vehicle;

a main shaft having first and second opposed ends, said first end being attached to said bracket and said main shaft having a stowed position, in which said main shaft second end is positioned adjacent the motor vehicle so that said main shaft second end can be horizontally pivoted away from the motor vehicle and a vertical orientation of said main shaft selectively set;

a first drive attached to said main shaft for selectively horizontally pivoting said main shaft;

a second drive attached to said main shaft for selectively setting the vertical orientation of said main shaft;

a telescoping assembly mounted within said main shaft;

said telescoping assembly adapted to extendably and retractably telescope, so that a free end of said telescoping assembly can be selectively extended away from or retracted towards said main shaft second end;

a third drive attached to said telescoping assembly for selectively extending and retracting said telescoping assembly; and

a controller for controlling said first, second, and third drives.

10. An extendable arm according to claim 9, further comprising:

said first drive and said second drive are a single X-Y-Z drive for rotating a ball-in-socket joint, whereby said main shaft pivots with three degrees of freedom.

11. An extendable arm according to claim 9, further comprising:

said mounting bracket disposed near the driver's side of the front bumper;

a rod extending substantially horizontally from said mounting bracket terminating at a support point near the passenger's side of the front bumper; and

a support bracket extending upwardly from said rod support point, said support bracket having a forward extending finger and an upward extending tip whereby said main shaft rests on said support bracket when not in use.

12. The extendable arm according to claim 9, further comprising:

said mounting bracket has a first end attached to the motor vehicle, and a second end disposed away from the motor vehicle;

a base attached said mounting bracket second end;

a first housing is fixedly attached to, and immediately above said base;

a rotation shaft is rotatably mounted to said first housing, and extends upwardly therefrom in a substantially vertical direction to be fixedly attached to a plate, and upwardly therefrom fixedly attached to a bottom panel of a second housing, said second housing having a front panel;

said rotation shaft is fixedly attached to said second drive, whereby said second drive rotates said second housing and said plate simultaneously, and whereby said first housing does not rotate because it is fixedly attached to said base;

a reduction shaft is fixedly attached to said first drive, said reduction shaft extending substantially horizontally away from said first drive through said second housing to a reduction gear rotatably mounted immediately forward of said front panel;

a substantially horizontally oriented pivot shaft is fixedly mounted to a pivot gear rotatably mounted immediately forward of said front panel, said pivot shaft extending forwardly and fixedly secured to said main shaft;

a reduction chain engages said reduction gear and said pivot gear;

said telescoping assembly has a first arm, a second arm, a third arm, and a fourth arm;

said first arm is secured within said main shaft;

said second arm is telescopically attached to said first arm;

said third arm is telescopically attached to said second arm;

said fourth arm is telescopically attached to said third arm;

a third housing is fixedly and concentrically attached to said first arm;

a third drive attached to said third housing and fixedly attached to a third drive shaft, said drive shaft fixedly attached to a spool, said spool rotatably mounted within said third housing; and

said spool has a u-shaped groove about its perimeter, said u-shaped groove having a center point coaxial with a center point of the telescoping assembly,

and said spool is adapted to receive said second, third and fourth arm, whereby the actuation of said third drive engages said spool to extend or retract said second, third and fourth arms.

13. An extendable arm according to claim 9, further comprising:

said mounting bracket first end attached to the motor vehicle via a utility frame, said utility frame attached to said vehicle frame under the front bumper.

14. An extendable arm according to claim 12, further comprising:

said first drive fixedly attached to a downward projecting drive shaft;

said downward projecting drive shaft extending downward to be fixedly attached to a first gear rotatably mounted on a top side of said bottom panel of said second housing;

said first gear engaging with a second gear via a first-second chain, said second gear rotatably mounted on said top side of said bottom panel;

a third gear fixedly mounted concentric with and immediately above said second gear;

said third gear engaging with a fourth gear via a third-fourth chain, said fourth gear rotatably mounted on said top side of said bottom panel;

an intermediate drive shaft is concentrically fixedly attached to said fourth gear, said intermediate drive shaft extends downwardly through said second housing bottom panel to be fixedly attached to a housing reduction gear rotatably mounted to a plate;

a housing rotation shaft fixedly mounted to said plate, and upwardly therefrom fixedly attached to said second housing, said housing rotation shaft extending

downwardly from said plate and is rotatably mounted to said first housing;

a housing rotation gear fixedly mounted to said housing rotation shaft immediately upwardly from said plate; and  
a reduction chain wrapped around said housing reduction gear and said housing rotation gear, whereby said housing reduction gear and said housing rotation gear rotate in unison to rotate said plate and said second housing relative to said first housing.

15. An extendable arm according to claim 12, further comprising:

said spool comprising a fixed half fixed to said third drive shaft and a moveable half that biases towards and away from said fixed half in the direction parallel to the third drive shaft's rotational axis, each of said halves divided substantially equally along the spool's plane of rotation; and

a compression spring concentrically surroundingly mounted on said third drive shaft, said compression spring having one end contacting said moveable half of said spool, and the other end contacting said third housing to bias said moveable half towards said fixed half.

16. An extendable arm according to claim 12, further comprising:

a rigid transverse securing member disposed substantially perpendicular to the longitudinal axis of said telescoping assembly, and immediately above said telescoping assembly, said securing member having ends fixedly attached to said third housing, whereby vertical shaking of said telescoping assembly is dampened.

17. An extendable arm according to claim 12, further comprising:

a holding spring having two ends secured to said third housing, said holding spring disposed transverse to the longitudinal axis of said first arm, and in contact with said first arm to bias said first arm downwardly and within said u-shaped groove.

18. An extendable arm for a motor vehicle comprising:

a shaft moveably attached to the motor vehicle, said shaft having first and second opposed ends, said first end terminating in a ball portion pivotally mounted in a ball-in-socket joint, said shaft having a stowed position, in which said second end of said shaft is positioned adjacent the motor vehicle and said ball-in-socket joint allows for a horizontal orientation of said shaft to be selectively set, and a vertical orientation of said shaft to be selectively set;

a drive to actuate said ball portion to selectively set the horizontal and vertical orientation of said shaft; and

a telescoping assembly fixedly mounted to said second end of said shaft, so that a free end of said telescoping assembly is adapted to extendably and retractably telescope.

19. An extendable arm according to claim 18, further comprising:

said ball-in-socket joint allows for said horizontal orientation and said vertical orientation by allowing for three degrees of freedom.

20. An extendable arm according to claim 18, further comprising:



a third drive attached to said telescoping assembly  
to extend and retract said telescoping assembly.